

DOCKET FILE COPY ORIGINAL

FCC MAIL ROOM

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

MAY 29 1997

RECEIVED

In the Matter of	)	WT Docket No. 97-12
	)	
Amendment of Amateur Service	)	RM-8737
Rules to Provide for Greater Use	)	
of Spread Spectrum Communication	)	
Technologies	)	

TO: The Commission

**REPLY COMMENTS OF  
THE W5YI GROUP, INCORPORATED**

**Background**

The W5YI Group, Inc., (W5YI), is the umbrella corporation which through its subsidiary W5YI-VEC, Inc., (a tax exempt educational organization under IRS 501-C3) and National Radio Examiners conducts Amateur and Commercial Radio operator training, examinations and electronic filing of applications. Over the past thirteen years, our organization has conducted over 300,000 amateur and commercial radio operator examination elements. W5YI is the only U.S. organization that oversees both amateur and commercial radio testing giving us wide experience and contact with the hobby and professional radio operator community.

We hereby submit Reply Comments pursuant to Section 1.415(c) of the Commission's Rules (47 C.F.R. §1.415) in response to the *Notice of Proposed Rule Making* (the Notice), FCC 97-10, released March 3, 1997. The Notice seeks a provision in the part 97 Rules to authorize additional spreading codes and automatic power limiting circuitry in the Amateur Service.

**Personal qualifications:**

I, Frederick O. Maia, W5YI have been a licensed Amateur Radio operator for more than four decades and am a member of the *Quarter Century Wireless Association* (25 years licensed),

*045*

the *Old Old Timers Club* (40 years licensed), the *Society of Wireless Pioneers* (ex-professional wireless telegrapher) and the *Radio Club of America* (the nation's oldest wireless "by invitation only" organization - formed in 1909.) W5YI was a military radio operator in the 1950's. I am the author of hundreds of radio magazine articles, publish a twice-a-month communications-oriented newsletter and am co-author of the "*General Radiotelephone Operator*" license manual. I believe I am qualified to speak out on the subject of radio technology.

**Discussion:**

I have reviewed many comments filed in this proceeding -- including ones filed by such prominent and prestigious organizations as the American Radio Relay League, Inc., the Amateur Satellite Corporation, Inc., and the Tucson Amateur Packet Radio Corporation. I have also examined comments filed by various amateur clubs, repeater groups and private companies and individuals.

It appears to me that a great many of these comments primarily address individual, company and organizational desires, rather than public needs or a look forward to telecommunications technology in the 21<sup>st</sup> century.

On the wall here in my office I have a framed photograph of myself and my W1NTK ham station as a teenager. In the photo, I am sitting in front of a brand new Johnson Viking Valiant AM 275-watt transmitter and a Hammarlund HQ-129X receiver. It took me a long time to be able to afford such a station and it was my pride and joy. Shortly after I purchased the equipment, I can remember hearing about how Air Force General Curtis Lemay, himself a ham operator, was endorsing a new alternative power and spectrum efficient voice transmission technology in the Strategic Air Command called single sideband.

I didn't understand how it worked. As far as I knew, on AM you needed a carrier to transport your modulation. "How could you possibly send 'sand' anywhere without a 'bucket' to hold it together?" I knew nothing about balanced modulators and band pass filters -- or how all

of the power could be concentrated in the sideband rather than wasted in the carrier. SSB also took up half the bandwidth. More power meant better communications while taking up less spectrum.

Furthermore, I didn't care. All I knew was that I had a new state-of-the-art AM rig that I had worked hard to be able to afford. I was immediately opposed to single sideband when I heard that conventional AM and SSB were not compatible. But amateurs wanted something better ...more communications punch per pound. So it wasn't too many more months before I heard "ducks quacking" on the band and interfering with my beautiful high-fidelity transmissions. And it got worse and worse. I was frustrated and infuriated. How could the FCC permit this interference?

A couple of years went by and I finally gave in and bought a "duck," -- a rig developed by another amateur, Art Collins -- a Collins S-line. I was back in the state-of-the-art business. Then transistors and integrated circuits made that equipment obsolete also. I now have a solid-state Icom set-up that is so complicated, that only professionals can maintain it. Today, conventional AM emissions on the high frequency band are a thing of the past.

### **What is the point of all of this?**

Well, I now hear that another new communications mode is on its way. Spread Spectrum to me seems to be just more "sand throwing." But instead of having a "bucket" (an inserted carrier) at the receiving end, the bits of "sand" are collected and assembled according to a formula by a computer "bucket." In the last couple of decades, PCs have become very sophisticated and inexpensive.

Spread Spectrum emission has the advantage of being able to share spectrum since only a tiny "bit" of the signal appears in a narrow-band analog communications channel. Theoretically you can overlay hundreds of communications signals over a wide bandwidth with no - or only a very slight - impairment to existing narrowband communications.

As spread spectrum becomes more entrenched, it is possible that the "noise floor" could

increase to the point of some interference. But like the conversion from conventional AM to single sideband, the conversion from narrowband to wideband technology has huge spectrum-saving and other advantages. For example, spread spectrum signals are not prone to the type of interference that plagues narrowband communications. The day may come, as it did nearly half a century ago, when wideband technology is the universal communications method. The technology deserves as much regulatory flexibility as possible to determine its value.

Spread Spectrum technology has the capability to permit thousands -- or millions -- of different spreading codes. So many, in fact, that each amateur could have their own code. A computerized "address book" linked to a call sign and band could identify a user's personal spreading code thereby eliminating the need for frequency coordinators. In effect, an amateur could have their own frequency. It is even possible that a "band of white noise" could replace the current band plan system. This all remains to be seen.

### **Conclusion:**

I can understand that existing users and frequency coordinators of the amateur bands are very concerned about a new technology entrenching on "their" narrow band territory. I have been there, done that. But I was wrong ...and selfish. The Commission must not adopt any rules which could impede widespread long range technological progress. Its duty is not to protect individual modes and very vocal narrow interests. The FCC is mandated to provide for the greater use of radio and its orderly development as rapidly and efficiently as possible.

Toward that end -- and after reviewing a great many of the comments filed in this Notice I suggest that the FCC:

- 1.) Not consider Spread Spectrum emissions as being secondary to any other as proposed. Section 97.311(b) should be eliminated and marked as "Reserved."
- 2.) We agree with the elimination of Section 97.311(c) and (d). Any type of spreading code should be permitted.
- 3.) Not require Automatic Power Control (APC) circuitry as proposed in Section 97.311(g).
- 4.) Not require a Spread Spectrum power limit of 100 watts. Existing power level wording

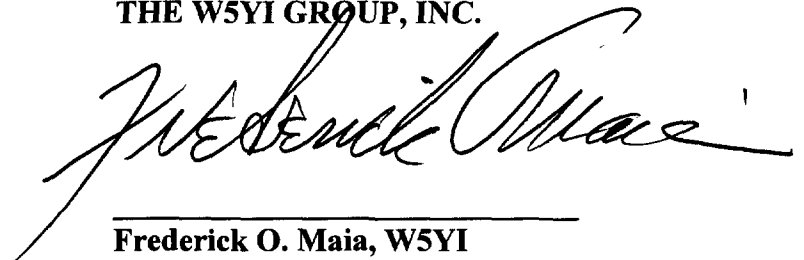
requiring minimum power is adequate. Section 97.311(g) should be eliminated and marked as "Reserved."

- 5) Eliminate the Spread Spectrum record keeping requirements of Section 97.311(e) which requires technical descriptions, pertinent parameters, SS methods and dates of operation to be documented. If necessary, these requirements could be incorporated into Section 97.311(f) "When deemed necessary by an EIC to assure compliance..."
- 6) Eliminate the CW identification requirement required in Section 97.119(b)(5) when a station transmits Spread Spectrum. SS transmissions -- including station ID -- should be as invisible as possible to existing narrowband users.
- 7) Amend Section 97.305(c) to permit Spread Spectrum to be used on as many bands as possible -- and at the very least, all VHF bands above 50 MHz. The Commission should ignore pleas from the repeater community who want to preclude Spread Spectrum operation from "their bands" or "their frequency pair."
- 8) The Commission should give no consideration to the comments of unlicensed Part 15 device manufacturers who primarily want to protect their low-power business interests from higher power amateur SS transmissions. The Amateur Service is a licensed, authorized service and unlicensed part 15 SS devices have no status. Part 15.5(b) clearly states that part 15 devices may not cause harmful interference to licensed stations "...and that interference must be accepted that may be caused by the operation of an authorized radio station..."

In short, the FCC must permit Spread Spectrum technology to evolve without imposing restraints which could impede its development.

2000 E. Randol Mill Road, Suite 608-A  
Arlington, Texas 76011  
Tel. 817/461-6443

Respectfully submitted,  
**THE W5YI GROUP, INC.**



**Frederick O. Maia, W5YI**  
**President**